Possessum Bias in Mandarin Chinese

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Abstract. While Mandarin Chinese permits possessor-to-object externalization, this externalization is limited to instances where the possessum is a body-part expression, resulting in what is known as possessum bias. This article suggests that possessum bias arises because the externalized possessor takes on an additional thematic role as a theme of the verb, thereby creating a double theme structure. In such a structure, a single predication applies to two objects, a configuration possible only with body-part possessums. Essentially, it's conceptually feasible for a body and its part to both serve as themes of the same event, a scenario impossible with other types of possessums. This paper provides a comprehensive explanation of possessum bias grounded in a unified understanding of the possessive relation across nominal and verbal domains. If validated, this approach could greatly enhance our understanding of the possessive relation.

Keywords. possessor externalization; possessum bias; possessive relation; identification; double theme

1. Introduction. The possessor-to-object raising like (1b) in Mandarin Chinese raises a number of interesting questions for linguistic theories. First, although the verb *da* "beat" is a transitive verb, (1b) presents a pattern with three arguments. How is the verb ditransitivized?

(1) a. Lisi da le liangci [Mali de shou].
Lisi beat PERF twice Mali POSS hand
"Lisi beat Mali's hand twice.

b. Lisi da le Mali liangci shou.
Lisi beat PERF Mali twice hand
"Lisi beat Mali's hand twice."

Second, one intriguing aspect of this possessor-to-object externalization is its dependence on whether the possessum refers to a body part. The externalization is possible only if the possessum is a body-part expression like *shou* "hand" in (2b); instead, a kinship expression like *erzi* 'son" in (2a) would make the structure fail. How does the externalization of a constituent α gives rise to a selectional restriction on another constituent β?

(2) a. Lisi da le liangci [Mali de erzi].
Lisi beat PERF twice Mali POSS son
"Lisi beat Mali's son twice."

b. *Lisi da le Mali liangci erzi.
Lisi beat PERF Mali twice son
"Lisi beat Mali's son twice.

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The externalization is strongly biased towards the body-part expression and thus called "Possessum Bias" here. It remains linguistically unclear why the externalization of one constituent α would impose restrictions on another linguistic component β. Current theories primarily focus on whether the displaced possessor incurs any restrictions, largely ignoring the additional restrictions on the possessum. According to these theories, if no selectional restrictions arise on the displaced possessor, it is considered a classical raising (Landau 1999; Xu 1999; Deal 2013), while if restrictions do emerge, it may be classified as either a control structure (Gueron 1985; Tomioka & Sim 2007) or thematic raising (Lee-Schoenfeld 2006; Rodrigues 2010; Duarte & Oliveira 2018). However, the possessum bias observed in Mandarin Chinese extends beyond the explanatory scope of these existing analyses as it implies an additional selection on the possessum.

This squib offers a comprehensive account at the syntax-semantics interface. From a syntactic perspective, I argue that the external possessor is dragged upward by a head movement *DE*-raising. As I will argue, the possessor is not externalized through a control structure (Gueron 1985; Vermeulen 2005; Tomioka & Sim 2007) which over-generates externalized embedded possessor, contradicting the fact that only the main possessor can externalize. Similarly, neither is it externalized through a "case-driven" raising (Landau 1999; Deal 2013; Lee-Schoenfeld 2006; Rodrigues 2010; Duarte & Oliveira 2018) which fails to explain why the raising is optional. Nevertheless, I maintain that the relevant phenomenon is a matter of raising (but not case-driven) in view of an interesting island effect. The island effect, in which the externalization of the possessor is blocked by a constituent that permits the possessor to occupy its specifier position, strongly indicates that there is another element involved in raising and that this element is genuinely being blocked. In the nominal domain, it is found that once the possessor displaces, it's impossible to strand the possessive head behind. Thus, based on these observations, I advocate for a head movement *DE*-raising that brings relevant properties together. Semantically, this squib argues that possessive relations are thematically unspecified and must be interpreted by identifying with another thematic constituent. Because of this event identification in the verbal domain, the externalized possessor becomes the theme of the verbal predicate, resulting in a double theme structure where the possessor and possessum are both theme of the same predicate. Event identification requires that the two theme roles be realized in one event. Only body-part expressions allow this double theme structure as beating Mali's hand entails beating Mali; by contrast, kinship expressions are conceptually incompatible – beating Mali's son never entails beating Mali.

This squib is organized as follows. Section 1 is an introduction to the issues and provides a preview of the proposal. Section 2 provides two key properties that available analyses cannot explain. Section 3 gives the syntactic proposal where the possessor is dragged upward by the possessive relation. Section 4 shows how the proposal explains the key properties. Section 5 discusses some relevant semantic assumptions, showing that the externalized possessor becomes a second theme of the verbal predicate, and that how body-part expressions satisfy relevant restrictions.

2. Key Properties.

2.1. MAIN POSSESSOR ONLY. In case of complex possessors, only the main possessor can externalize. For example, the possessor in (3a) is a complex nominal phrase *Mali de laogong* "Mali's husband". In this case, either the primary possessor *Mali de laogong* "Mali's husband" or the embedded possessor *Mali* is a possessor that might externalize. However, the crucial observation is that only the main possessor in (3b) can legitimately externalize; in contrast, the embedded

possessor in (3c) cannot.

(3) a. Lisi da le liangci Mali de laogong de shou.
Lisi beat PERF twice Mali POSS husband poss hand
"Lisi beat Mali's husband's hand twice."

b. Lisi da le Mali de laogong liangci shou.
Lisi beat PERF Mali POSS husband twice hand
"Lisi beat Mali's husband's hand twice."

c. *Lisi da le Mali liangci laogong de shou.
Lisi beat PERF Mali twice husband POSS hand
int. "Lisi beat Mali's husband's hand twice."

This observation contradicts the control analysis where PRO is postulated in the nominal domain to derive the possessive relation between non-local constituents (c.f. Gueron (1985); Vermeulen (2005)). A basic fact in the possessor-to-object raising in Mandarin Chinese is that while *Mali* in (4) is the possessor argument of *shou* "hand", it is also an argument of the verb *da* "beat", resulting in different thematic roles in the same individual *Mali*. This is not acceptable by the theta criterion in the framework of Chomsky (1981) and a solution is to postulate a PRO inside the possessive nominal; the PRO is bound by the external theme so that *Mali* is realized as both a possessor and a theme (c.f. Vermeulen (2005)). This solution works when the possessor is simple like (4):

(4) Lisi da le Mali liangci [$_{DP}$PRO$_i$ shou].
Lisi beat PERF Mali twice hand
"Lisi beat Mali's hand twice."

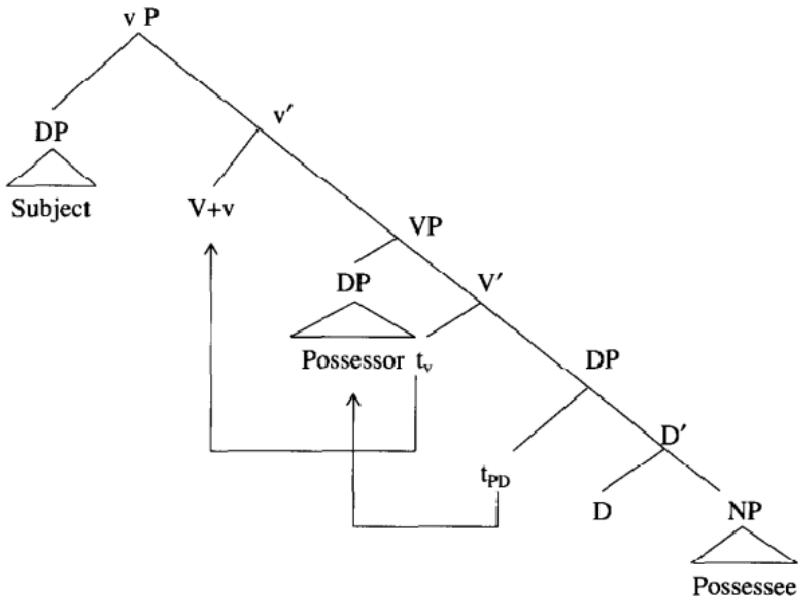
However, the PRO analysis overgenerates when the possessor is complex. While it generates the main possessor externalization in (5a), it also generates the ungrammatical externalization of the embedded possessor in (5b).

(5) a. Lisi da le Mali$_i$ de laogongi liangci [$_{DP}$PRO$_i$ shou].
Lisi beat PERF Mali POSS husband twice hand
"Lisi beat Mali's husband's hand twice."

b. *Lisi da le Mali$_i$ liangci [$_{DP}$ PRO$_i$ laogong de shou].
Lisi beat PERF Mali twice husband POSS hand
"Lisi beat Mali's husband's hand twice."

Additionally, the facts in (3a) and (3b) also imply that case-driven raising is not an option. Possessor externalization in works like Landau (1999) & Lee-Schoenfeld (2006) is analyzed as case-driven raising. Landau (1999) studies the possessor externalization in Hebrew and Romance languages and his account features two assumptions: first, the possessor bears dative case feature and is unchecked in the nominal domain; second, it raises to the verbal domain for case-checking:

(6)



Accordingly, it is thus assumed that the possessor externalization is obligatory but the fact in Mandarin Chinese is that for every case where the possessor externalizes like (3b), there is a counterpart where the possessor remains local to the possessive phrase like (3a). As a result, the externalization under discussion is not case-driven.

2.2. ISLAND EFFECTS. Nevertheless, I still maintain that the possessor externalization in Mandarin Chinese is a matter of raising, since it exhibits island effects (Ross 1967) – the possessor cannot externalize if an unstressed demonstrative is available. For example, (7a) allows the possessor *Mali* to externalize in (7b); however, an unstressed demonstrative *zhei* makes the externalization unacceptable in (7c):

(7) a. Lisi da le liangci Mali de shou.
Lisi beat PERF twice Mali POSS hand
"Lisi beat Mali's hand twice."

b. Lisi da le Mali liangci shou.
Lisi beat PERF Mali twice hand
"Lisi beat Mali's hand twice."

c. *Lisi da le Mali liangci zhei shou.
Lisi beat PERF Mali twice DEM.UNST hand
"Lisi beat Mali's hand twice."

Mandarin Chinese allows two versions of demonstratives, the stressed demonstrative *zhe* "DEM" which is typically accompanied with a classifier *ge* "CL" and the unstressed demonstrative *zhei* "DEM.UNST" which does not go with any classifiers. As illustrated in (7c), the presence of *zhei* acts as a barrier, blocking *Mali* from being externally realized. Different from conventional island effects where the blocked constituent is not expected to appear together with the barrier, *zhei* does appear together with *Mali*.

(8) Lisi jiu xiang da Mali zhei pang shou.
Lisi just want beat Mali DEM.UNST fat hand
"Lisi just wants to beat Mali's fat hand."

If *zhei* is indeed blocking the raising path of *Mali*, there are two possibilities. First, it could be that *zhei* and *Mali* are competing for the left periphery of the nominal phrase. As an alternative possibility, *zhei*, acting as a head, might not permit *Mali* to occupy its specifier position. In either scenario, *Mali* would be unable to occupy the left periphery of the nominal phrase. However, it is important to note that the actual fact in (8) contradicts this assumption – despite the blocking effect, the specifier position of *zhei* is available to *Mali*.

What (8) shows is that there is no competition between *Mali* and *zhei*, and *zhei* does not disallow *Mali* to occupy its specifier position. That is, *zhei* does not block *Mali* in any sense. If what *zhei* blocks is not the raising path by *Mali*, what is *zhei* blocking?

3. Syntax: DE raising. This section offers an option that what *zhei* blocks is *DE*. Specifically, possessor externalization is triggered by the incorporation of *DE* into the verb *da* "beat"; due to the AGREE relation between *DE* and the possessor, the possessor is dragged into the verbal domain.

Here, I show that it's both possible and necessary for the possessive head to displace. Empirically, it is widely observed that the possessive head can move and incorporate into the verb domain. For example, the possessive verb *HAVE* is formed by incorporating the possessive head into the copula verb *BE* (Benveniste 1966; Bach 1967; Freeze 1992; Kayne 1993, 1994, 2010). For example in Coptic Egyptian (Reintges & Liptak 2008), the possessive predicate *w*:*nte* "have" is a fused form of a copula verb *w*:*n* plus a possessive head :*nte*.

(9) W:nte n:-halate :n-t-pe ne.u-mah.
have DEF.PL-birds LINK-DEF.F.SG-sky DEF.PL.3PL-nest
"And the birds of the sky have their nests."

Findings like this allow the possessive head to move together with the possessor. Theoretically, the movement of the possessive head is also required because of the argument status of the possessor. For example, the external possessor in (10a) can be passivized to a subject position:

(10) a. Lisi da le liangci Mali shou.
Lisi beat PERF twice Mali hand
"Lisi beat Mali's hand twice."

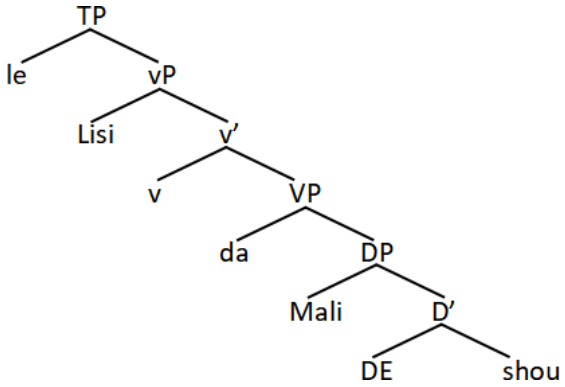
b. Mali bei Lisi da le liangci shou.
Mali PASS Lisi beat PERF twice hand
"Zhangsan is beaten by Lisi in her hand for twice."

This doubtlessly demonstrates that *Mali* in (10b) must have maintained its argument status from its base position to the subject position, otherwise improper movement. However, for *Mali* to arrive at the subject position, there are multiple intermediate positions which are A-bar positions. For example, because of movement cyclicity, *Mali* must land on the spec position of *da* "beat" whose argument positions are, however, exhausted, leaving there only A-bar positions if any. If

Mali moves all by itself, landing on this position renders *Mali* an A-bar status, and subsequent movements from this A-bar position to the subject position will suffer from improper movement. For reasons like this, I argue that the possessive head moves together and offers proper A-status for the possessor to move to the subject position.

The underlying structure I assume is represented in (11). *Mali* and *shou* "hand" form a possessive phrase with *DE* as the projecting head; the possessive phrase is then taken as complement to the verb *da* "beat"; little *v* is projected and introduces *Lisi* as the external argument; then *T* is projected.

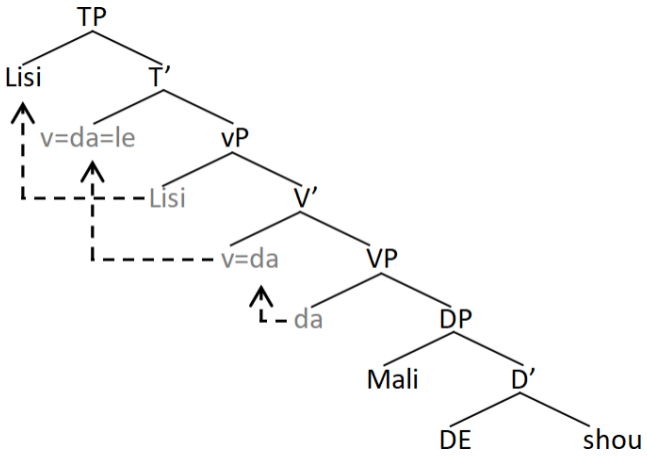
(11)



To derive the possessor internal structure of (1a) repeated as (12a), the verb *da* "beat" first moves to little *v* and then to *T*. As the highest nominal, *Lisi* moves to the subject position.

(12) a. Lisi da le liangci Mali de shou.
Lisi beat PERF twice Mali POSS hand
"Lisi beat Mali's hand twice."

b.

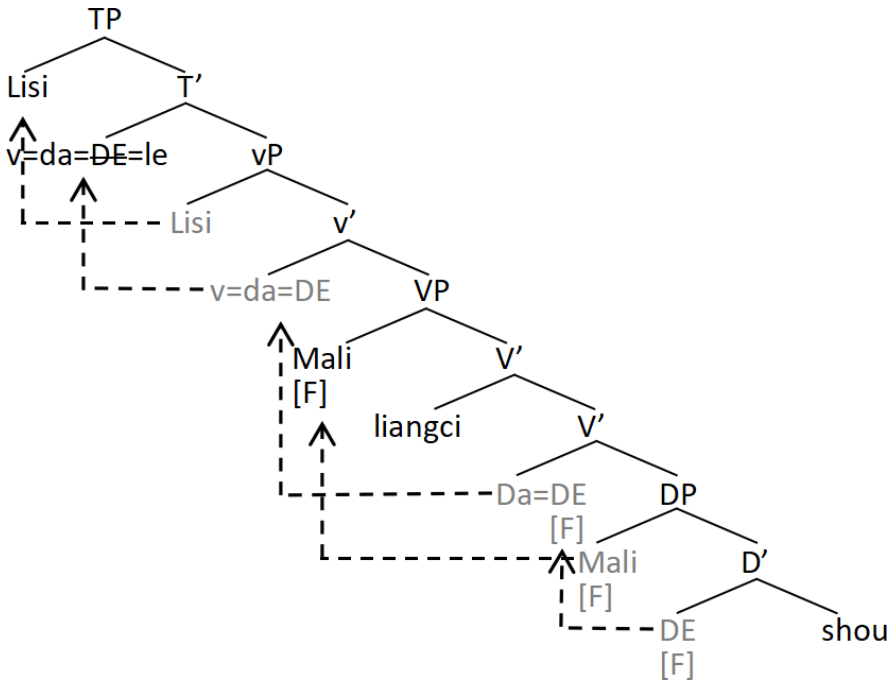


To form the possessor-external structure of (1b), repeated as (9), *DE* first incorporates into *da* "beat". It is universally assumed that there is an AGREE relation between the possessive head and the possessor, represented as feature [F]; when *DE* is incorporated into the verb, the feature

[F] is also inherited into the verbal complex *da=DE*; to check [F], *Mali* raises to the verbal domain. Then, just as the possessor-internal structure, the verb complex *da=DE* moves to v, and then to T; *Lisi* raises to the subject position.

(13) a. Lisi da le Mali liangci shou.
Lisi beat PERF Mali twice hand
"Lisi beat Mali's hand twice."

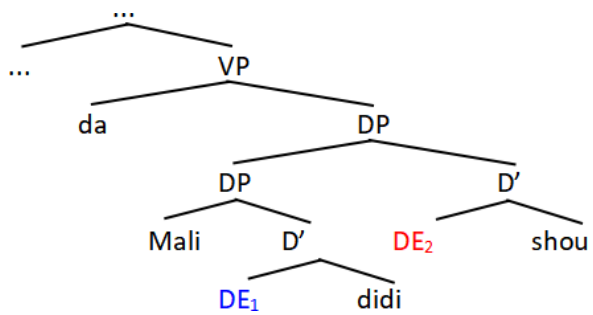
b.



4. Predictions.

4.1. WHY MAIN POSSESSOR ONLY? The fact that only main possessors can externalize can be explained by minimality. (14) is the structure of a possessive phrase: *Mali de didi de shou* "Mali's brother's hand", and it's not hard to see that DE_2 is structurally higher than DE_1, which means that only DE_2 is eligible for raising.

(14)



In this case, only the complex possessor that establishes an AGREE relation with DE_2 can externalize; the embedded possessor cannot externalize because the corresponding DE_1 is structurally too low.

4.2. WHY ISLAND EFFECTS?. While *zhei* does not block the possessor, it blocks the raising path of *DE*. As a head, the movement of *DE* abides by the head movement constraint which requires the head movement to be strictly local:

(15) *Head Movement Constraint* (Travis 1984)
Head movements may not skip intermediate heads.

The movement of *DE* into the verbal domain should also land on intermediate heads if any. This is true for cases like quantifiers like *liang-zhi* "two-CL"[1] (18a); by contrast, as has already been observed, the use of the unstressed demonstrative *zhei* renders the externalization of the possessor impossible (18b).

(18) a. Lisi da le Mali liangci liang-zhi shou.
Lisi beat PERF Mali twice two-CL hand
"Lisi beat Mali's hand twice."

b. *Lisi da le Mali liangci zhei shou.
Lisi beat PERF Mali twice DEM.UNST hand
int. "Lisi beat Mali's hand twice."

The difference between the quantifier *liang-zhi* "two-CL" and *zhei* is that *liang-zhi* "two-CL" in (19b) allows the possessor to displace to its front along with *DE* (19b), whereas *zhei* in (20b) does not.

[1] For some speakers, (18a) is not fully natural, but this unnaturalness does not amount to ungrammaticality. As an alternative way of expressing external possession, possessors can be the subject of a passive sentence:

(16) Mali bei Lisi da le liang-zhi shou.
Mali PASS Lisi beat PERF two-CL hand
"Mali's two hands were beaten by Lisi."

(16) is the passivized form of (18a), and (16) would be ungrammatical if (18a) is truly ungrammatical; however, (16) sounds acceptable to a native ear. By contrast, the insertion of *zhei* consistantly makes the active (18b) and passive form (17) unacceptable.

(17)
*Mali bei Lisi da le zhei shou.
Mali PASS Lisi beat PERF DEM.UNST hand
Int. "Mali's two hands were beaten by Lisi."

(19) a. Liang-zhi Mali de shou
Two-CL Mali POSS hand
"Lisi beat Mali's hand twice."

b. Mali de liang-zhi shou
Mali POSS two-CL hand
"two of Mali's hands"

(20) a. Zhei Mali de shou
DEM.UNST Mali POSS hand
"Lisi beat Mali's hand twice."

b. *Mali de zhei shou
Mali POSS DEM.UNST hand
"two of Mali's hands"

c. Mali zhei shou
Mali DEM.UNST hand
"this hand of Mali's"

In the current account, *DE* is also covertly moving upward, so it predicts that if *DE* cannot move through intermediate heads, the head movement constraint will ban the movement and will give rise to the island effect. This prediction is also verified by other intermediate heads as well. Only heads that allow *DE* to move to it (just like (19b)), e.g. *yixie* 'some", *zhe-ge* "this", *zangxixide* "dirty", allow possessor externalization, whereas heads that do not allow *DE* to move to it, like *zhei* or *nei*, disallow possessor externalization.

Besides, the current proposal also explains why displacing the possessor to the left periphery is not enough to allow possessor externalization. Existing accounts such as Szabolcsi (1994) assume that displacing the possessor to the left periphery makes the possessor visible to higher operations and thus is sufficient for its externalization. However, in the present proposal, the underlying factor behind the possessor displacement is the head movement of *DE* and merely having the possessor situated at the left edge is not adequate to enable possessor externalization. As a result, different predictions arise in terms of the ability to allow possessor externalization when the possessor is at the left edge of a possessive phrase.

(21) Mali zhei shou
Mali DEM.UNST hand
"this hand of Mali's"

In example (21), *Mali* is occupying the specifier position of *zhei*. However, *Mali* cannot be further externalized in the case of *zhei*. As I have already demonstrated, merely displacing the possessor to the left edge is insufficient for possessor externalization. The key factor lies in displacing *DE* rather than the possessor to the left edge, which, unfortunately, is not permitted by *zhei*.

5. Possessum Bias. This section argues that *DE*-raising gives rise to a double theme structure that directly explains the possessum bias. *DE* as a possessive relation is thematically unspecified, motivating an integrated interpretation together with a thematically contentful head. Consequently, a verb complex emerges, wherein both the possessive phrase and the possessor function as themes of the verb. This combined interpretation is achieved by way of event identification which requires that the two events be realized in one eventuality. Only body-part expressions are conceptually compatible with the single-eventuality requirement.

To start with, as scholars like Ritter & Rosen (1993) and Burton (1995) notice, the possessive relation is thematically unspecified. When the possessum is sortal, the possessive relation is rather free in interpretation. For example, *Mali de shu* "Mali's book" can be interpreted as the book that Mali bought, Mali wrote or anything that the context allows. What is suggested here is that while the possessive head connects *Mali* and *shu* in a relation, the thematic nature of the connecting relation is unspecified, giving rise to the wide range of possible interpretations. To arrive at a proper interpretation, the hearer would appeal to the context for the most likely reading. By contrast, if the possessum is relational, the thematic content of the possessive relation is furnished by the possessum. For example, *Mali de erzi* "Mali's son" specifies *Mali* as a parent; *Mali de shou* "Mali's hand" specifies *Mali* as the body. What determines the thematic content of the possessive relation is the possessum. As Barker (1991) has argued forcefully, relational nouns bear inherent thematic relations. For example, *erzi* 'son" carries a hidden relation give-birth-to(x,y) and *shou* "hand" carries a hidden relation body-part(x,y). Consequently, when the possessum is relational, the possessive head takes over the thematic content from the possessum. The freedom of interpretation on *Mali de shu* 'Mali's book' suggests that the possessive relation does not have any inherent thematic content, and the hooked interpretation in Mali's son shows that while lacking an inherent thematic content, the possessive head can take it over from other constituents.

The thematic structure of *DE* is specified by event identification. Thematically unspecified events are not interpretable in LF, while the principle of Full Interpretation (Chomsky 1986) requires all arguments to be interpretable in LF. Thus it's impossible to submit the possessive relation directly to the interpretation system. Instead, an argument structure operation (c.f. Ritter & Rosen (1993)) that combines the unspecified structure of the possessive relation with the argument array of an independent predicate must have taken place to salvage the situation. Enlightened by Burton (1995), I argue that the operation is event identification. According to Kratzer (1996), event identification takes the following form:

(22) Event Identification

f	g	→	h
⟨e,st⟩	⟨s,t⟩		⟨e,st⟩

Event identification takes one function from individuals to functions from eventualities to truth values and one function from eventualities to truth values, and conjoins them into a single function (Stranahan 2012). The idea behind the scene is a neo-Davisonian mode of argument association, namely that verbs introduce the event variable but their arguments are introduced/associated by separate predicates. Kratzer (1996)'s argument is that if a given constituent is truly an argument of a verb V, then V should be sensitive to its argument characteristics, but verbs are never sensitive to the semantic characteristics of their external arguments; therefore, external arguments

are not true arguments of the verb. Here I argue that the possessive relation is the separate predicate that associates the predicate with additional arguments.

The event identification also identifies the possessor as theme of the verb. One assumption by Kratzer (1996) is that little v inherently assigns its argument the agent role, but that's not possible for the possessive relation. It's illogical for a thematically unspecified relation to have a prespecified theta role. For this reason, it's more reasonable to assume that the role of the argument taken by the possessive relation is unspecified as well, and this role is determined when the possessive relation is thematically specified. Meanwhile, following the Neo-Davidsonian tradition, I assume that verbs are syntactically multiple-place predicates, but semantically they are only one-place predicates. That is, a predicate like *da* "beat" lists only a theme role (19a); additional roles are associated by additional predicates. (*P(e)* is defined as an unspecified proposition, and *R(x,e)* is defined as an unspecified role.)

(23) a. ⟦*da*⟧ = λxλe[Beat(e) & Th(x, e)]

b. ⟦*de*⟧ = λxλe[P(e) & R(x, e)]

When the possesssive relation sees the thematic content of the verb, it takes over thematic content from the verb. When *DE* identifies with *da* for its thematic content, it naturally gets the only theta role, namely theme role, from *da* and assigns it to its own argument. The resulting structure is a double theme structure where both the possessive phrase and the possessor serve as theme of the beating event.

(24) a. ⟦*da* (*Mali de shou*)⟧
= ∃xλe[Beat(e) & Th(x, e) & Hand(Mali, x)]

b. ⟦*DE da Mali de shou*⟧
= λyλe[**P**(e) & **R**(y, e)] & ∃xλe[Beat(e) & Th(x, e) & Hand(Mali, x)]
= λyλe[**Beat**(e) & **Th**(y, e)] & ∃xλe[Beat(e) & Th(x, e) & Hand(Mali, x)]

c. ⟦*DE da Mali de shou* (*Mali*)⟧
= λe[Beat(e) & Th(Mali, e)] & ∃xλe[Beat(e) & Th(x, e) & Hand(Mali, x)]
= ∃xλe[Beat(e) & Th(Mali, e) & Th(x, e) & Hand(Mali, x)]

(24a) is the denotation by VP; next *DE* (moves out and) sees V (c.f. (13b)), and identifies with V, deriving (24b); then, *Mali* saturates the variable and derives the double theme denotation in (24c).

For the identification to occur, two events must be realizable as one single eventuality. As is self-evident in event identification, two events are identified as one. This means that the resulting event complex will be realized in one eventuality.

(25) Single Event Requirement
For two events to be identified, they should be realized in one eventuality.

That is, beating Mali and beating Mali's hand should be realized in one eventuality. Now, it is self-evident why body-part expressions are preferred over kinship expressions like (26b).

(26) a. Lisi da le Mali liangci shou.
Lisi beat perf Mali twice hand
"Lisi beat Mali's hand twice."

b. *Lisi da le Mali liangci erzi.
Lisi beat perf Mali twice son
"Lisi beat Mali's son twice."

Only body-part expressions may satisfy the single-eventuality requirement of event identification, since beating Mali's hand entails beating Mali. Due to this entailment, two events are logically realizable in one event. By contrast, if the possessum is a kinship expression, like *shushu* "uncle". Beating Mali's uncle never entails beating Mali, and providing no way for the two events to be realized in one eventuality. The entailment relation that allows possessor externalization from body-part expressions is summarized as below:

(27) Eventive Entailment
The possessor of a possessive phrase can externalize when a change-of-state predication on the possessive phrase also entails a change-of-state predication on the possessor of that phrase.

This entailment permits that the two events be conceptually identified as one single eventuality and is required by the double theme nature of possessor-to-object externalization.

6. Conclusion. This squib studies an unchartered corner of possessor externalization where the possessor is externalized to function as the theme of the verb and the possessum is biased towards body-part expressions in Mandarin Chinese. It is shown that the overall externalization is achieved by a head movement where *DE* incorporates into the verbal domain and drags the possessor upwards. As thematically unspecified, the possessive head *DE* identifies with the verbal predicate for proper interpretation, with the externalized possessor being assigned a theme role. For this to be possible, the two events, namely the events denoted by the possessive relation and the event by verbal predicate must be conceptually realized in one eventuality. This is possible with body-part expressions since beating Mali's hand entails beating Mali; by contrast, beating Mali's son never entails beating Mali. Because of this difference, body-part possessum is compatible with the single-eventive requirement and is preferred over kinship possessum.

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